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Asbestos and Lead-Based Paint and Lead-Glazed Ceramic Tile Survey Report

Fire Station #3 at 3200 Santa Rita Road, Pleasanton, CA

Prepared For Jeff Katz Architecture

March 11, 2016

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Our inspection was performed on March 7, 2016.

Anyone reading this report should read the entire report, including attachments, which are part of this report. We use “we” throughout, rather than the awkward repeating of our name.

Project-Specific Limitations

None. This was not a limited survey. The general limitations at the end apply to all projects.

Company Background

Since 1991 we have provided services at many thousands of properties of all types. Our goals have always been to produce superior reports, offer superior value, and provide superior service. Significantly, about 33% of our revenue has been from sub-consulting work for medium and large consulting companies who demand top quality and choose to trust us to do work for their clients. Our clients include investors, architects, lenders, attorneys, government organizations, property management firms and other consulting firms. We provide a wide range of services needed for pre-acquisition due diligence of commercial properties and for management and correction of identified hazards or deficiencies. Please visit our web site for more information: <http://www.masekconsulting.net>

Asbestos Survey Findings

A Friable material can be broken, crumbled, pulverized or reduced to powder by hand pressure when dry (e.g. structural fireproofing, pipe insulation, ceiling tile, ceiling texture). Non-Friable materials include items such as vinyl floor tile, mastics, plastic roof cement, stucco, drywall joint compound & texture, roofing, and sheet vinyl flooring (when in place and in good condition, friable once disturbed). A non-friable material may become friable when disturbed or deteriorated.

Drywall With Asbestos Joint Compound

Many years ago US EPA correctly stated that drywall and joint compound can never be separated, so **for disposal only**, a composite of the two is used to determine if it is or is not ACM (a material containing over 1% asbestos by weight). However, you don't need laboratory analysis when mathematical analysis tells you it is impossible for the composite to be over 1%.

Our experience and research indicates that drywall joint compound containing asbestos was typically manufactured with several percent asbestos, and the asbestos type is usually reported to contain between less than one percent and five percent asbestos. Drywall joint compound which contains 5% asbestos would have to make up over 20% of the composite with the non-asbestos drywall for the composite material to be over 1% asbestos by weight. If it has a lower percentage asbestos content, it would have to make up a greater percentage of the composite. Anyone who has seen drywall after the drywall joint compound has been applied to the joints and fastener locations, and who considers the thickness and weight of the drywall in comparison to the thickness and weight of the drywall joint compound, knows that it is impossible for the drywall joint compound to make up over 20% of the composite weight. This is also the case if the joint compound has also been used to apply a thin texture. The only exception is a situation

in which joint compound has been applied in a thick layer over the entire surface of the drywall to produce some sort of skim coat, often with a decorative trowel pattern.

The US EPA regulates disposal, so drywall with asbestos joint compound may be disposed as construction debris, although some landfills have their own rules which impact the disposal of such materials. OSHA regulates employee exposures, so the materials must be handled properly to comply with their regulations.

Homogeneous Areas and Samples

To make the following table and this report readily readable, we utilize 12 point or larger type for all but the page footers and attachments. People also do not like having to turn pages to read them, especially if they are reading a screen. For the convenience of readers, we minimize the number of columns by using convenient codes for condition, disturbance potential, friability, removal, and waste handling.

Damage may be physical, due to deterioration, or due to water. Significant Damage means 10% or more evenly distributed, or 25% or greater localized damage. Damage means less than 10% damage (e.g. abraded, gouged, blistered, peeling, crumbling). Good means no or very little damage or deterioration.

Materials may be disturbed by contact, vibration, or air erosion, and all of those possible sources of disturbance are considered in determining if there is potential for significant damage, potential for damage, or low potential for damage.

Taking all of those factors into consideration, materials which contain asbestos (those containing over 1% asbestos are Asbestos Containing Materials) are categorized according to the following Hazard Rank scale:

- worst 7 - Friable with significant damage
6a - Friable with damage and potential for significant damage
6b - Non-Friable with significant damage and potential for more significant damage
5a - Friable with damage and potential for damage
5b - Non-Friable with significant damage and potential for additional damage
5c - Non-Friable with damage and potential for significant damage
5d - Friable in good condition and potential for significant damage
4a - Non-Friable with significant damage and low potential for disturbance
4b - Friable with damage and low potential for disturbance
3a - Friable in good condition and potential for damage
3b - Non-Friable with damage and potential for damage
3c - Non-Friable in good condition and potential for significant damage
2a - Friable in good condition and low potential for disturbance
2b - Non-Friable with damage and low potential for disturbance
2c - Non-Friable in good condition and potential for damage
best 1 - Non-Friable in good condition and low potential for disturbance

Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than one percent (1%) asbestos as determined

using polarized light microscopy (PLM) according to the method specified in Appendix A, Subpart F, 40 CFR Part 763. (Sec. 61.141), or assumed to be such.

Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than one percent (1%) asbestos as determined using polarized light microscopy according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (Sec. 61.141), or assumed to be such.

If all or portions of materials which contain asbestos are removed (using typical methods and equipment), the following Waste codes indicate how the waste should be disposed:

F - Friable, hazardous asbestos waste;

NF - Non-Friable, non-hazardous asbestos waste; or

O - OSHA regulations regarding materials containing greater than zero, but less than 1% asbestos apply. Dispose as construction debris or non-friable asbestos waste, depending on the requirements of the landfill where the waste is disposed.

Suspect materials which are not sampled must be assumed to contain asbestos. Materials are typically assumed to contain asbestos due to the material being readily identifiable (e.g. asbestos-cement items), lack of access, or to avoid the cost of laboratory analysis for materials which commonly contain asbestos (e.g. plastic roof cement).

We generally omit the prefix of the sample numbers from the sketch(es) or drawings for clarity. Such prefixes are used solely to prevent the laboratory from accidentally mixing samples from different batches.

Please see the Scope of Services section below for information on our sampling protocols.

We use the words "roughly" or "approximately" with quantities to prevent contractor change orders for minor variations in quantity. Contractors should verify the site conditions, material location(s), and quantities to their satisfaction prior to committing to a price for removal work.

Homogeneous Area (an area of material uniform in color, texture, construction or application date and general appearance)	Sample Number	Specific Sample Location If one or more samples contain asbestos, the entire homogeneous area must be treated as asbestos containing	Lab. Result % or None Detec ted	Asbestos Containing Materials	
				Hazard Rank	Waste
tar paper under the foam roof	FS3-1	flat roof in back	ND		
composition roof shingles	FS3-2	left center	ND		
tar paper under the composition shingles	FS3-3		ND		

Homogeneous Area (an area of material uniform in color, texture, construction or application date and general appearance)	Sample Number	Specific Sample Location If one or more samples contain asbestos, the entire homogeneous area must be treated as asbestos containing	Lab. Result % or None Detec ted	Asbestos Containing Materials	
				Hazard Rank	Waste
top (color) layer of stucco	FS3-4	at the roof level, left side	ND		
	FS3-26	at the patio	ND		
bottom (gray) layer of stucco	FS3-5	at the roof level	ND		
	FS3-27	on the patio	ND		
drywall joint compound & texture in the original building portion, roughly 7,000 square feet	FS3-6	in the exercise room at the light switch	2	3c	NF
	FS3-8	at the light switch in the dorm room 2	2		
	FS3-13	in the engine room left front corner	ND		
	FS3-15	at the door to the fire engine room	2		
	FS3-18	on the corner at the entrance to the day room	2		
	FS3-21	in the dining area on the column where damaged	ND		
drywall joint compound & texture in the dormitory addition	FS3-23	at the window in dorm room 3	ND		
	FS3-24	at the window in dorm room 2	ND		
	FS3-25	in the restroom addition	ND		
vinyl floor tile under the carpet in te original building portions of the dormitory area and assumed under the heavy rubber floor mats in the exercise room, roughly 1,400 square feet	FS3-9	in the dorm room #2 under the carpet	2	1	NF
	FS3-11	in the dorm room #3 under the carpet	2		
	FS3-16	in the office, center	2		

Homogeneous Area (an area of material uniform in color, texture, construction or application date and general appearance)	Sample Number	Specific Sample Location If one or more samples contain asbestos, the entire homogeneous area must be treated as asbestos containing	Lab. Result % or None Detec ted	Asbestos Containing Materials	
				Hazard Rank	Waste
mastic adhering the vinyl floor tile under the carpet, roughly 1,400 square feet	FS3-10	in dorm room #2	10	1	NF
	FS3-12	in dorm room #3	10		
	FS3-17	in the office, center	10		
cove base mastic	FS3-14	right front section of the fire engine room	ND		
duct seam mastic, Photo 8, roughly 500 square feet (of mastic, not ducts)	FS3-7	above the ceiling in the restroom	3	1	NF
sheet vinyl flooring in the restroom	FS3-19	office restroom behind the front office	ND		
fibrous floor coating in Day room	FS3-20	day room, under the carpet	ND		
new type gray 12x12 vinyl floor tile in the kitchen and dining area	FS3-22	dining area at the column, where floor is damaged	ND		

Lead-Based Paint and Lead-Glazed Ceramic Tile Survey Findings

No lead-based paint (XRF readings greater than or equal to 1.0 mg/cm² in most places) was identified.

The lead-glazed ceramic tile (XRF readings greater than or equal to 1.0 mg/cm²) is:

- The white ceramic wall tile in the restroom off addition, Photo 16.

Lead Survey Samples

A room equivalent is an identifiable part of a building (e.g., room, exterior, corridor, stairway, foyer, Etc.). Closets or other similar areas adjoining rooms are not considered as separate room equivalents unless they are obviously dissimilar from the adjoining room equivalent.

Each testing combination may be composed of more than one building component (such as two similar windows within a room equivalent).

Surfaces covered with wallpaper are assumed to be painted.

For varnished, stained, or similar clear-coated floors, measurements in only one room equivalent are permissible if it appears that the floors in the other room equivalents have the same coating.

Some testing combinations have multiple parts. For example:

- All of the parts of an interior window sash;
- All of the parts of the window frame and trim (casings, stops, jambs, aprons, Etc.);
- All of the parts of baseboard assembly (main board, quarter round, and so forth);
- All of the parts of a door (stiles, rails, panels, mullions, panels, Etc.); and,
- All of the parts of a door frame assembly (jambs, stops, transoms, casings, Etc.).

Because it is highly unlikely that all the parts would have different painting histories, they are not considered separate testing combinations, unless we have substantial evidence that different parts have separate, distinct painting histories.

When the plus or minus indication on the XRF instrument is such that adding the amount indicated to the reading would cause it to be equal to or over the positive level, we add it and report that amount.

Testing Combinations			Color	Condition G - good F- fair P- poor	Lead mg/cm ²
Room Equivalent	Component	Substrate W - wood P - plaster S - stucco M - metal D - drywall			
	calibration 1.04				1.0
	Calibration 0.31				0.3
	Calibration 0.71				0.7
Exterior	wall	s	tan	g	0.01
	door	w	tan	g	0.18
	door frame	w	tan	g	0.2
Exercise room	door	w	gray	g	0.13
	door frame	w	gray	g	0.13
	wall	d	white	g	0.01
Restroom/locker/shower room	door frame	w	gray	g	0.24
	door	w	gray	g	0.09
	wall	ceramic	gray	g	0.00
	closet door frame	w	white	g	0.01
	restroom stall	m	blue	g	0.03
	ceiling	d	white	g	0.00

Testing Combinations			Color	Condition G - good F- fair P- poor	Lead mg/cm ²
Room Equivalent	Component	Substrate W - wood P - plaster S - stucco M - metal D - drywall			
	floor	ceramic	gray	g	0.00
Dormitory	door frame	w	gray	g	0.00
	closet door frame	w	white	g	0.06
	closet door	w	white	g	0.01
	wall	d	white	g	0.00
Engine room	wall	d	white	g	0.01
	roll up door frame	m	brown	g	0.01
	floor	concrete	gray	f	0.05
	door frame to dormitory	w	gray	g	0.17
	door to dormitory	w	gray	g	0.16
Office	door frame	w	gray	g	0.08
	door	w	gray	g	0.06
	wall	d	white	g	0.01
	door frame	w	tan	g	0.01
	door frame to exterior	w	tan	g	0.01
Day room	wall	s	white	g	0.00
	window sill	w	white	g	0.00
Kitchen	cabinets	w	white	g	0.00
	door frame	w	gray	g	0.01
	wall	d	white	g	0.00
Addition	restroom wall	ceramic	white	g	6.1
	Restroom floor	ceramic	tan	g	0.01
	door frame	w	gray	g	0.01
	door	w	gray	g	0.01
Exterior	wall	s	tan	g	0.00
	patio post	w	white	g	0.00
	roll up door	m	white	g	0.00
	wall	s	tan	g	0.01
	calibration 1.04				1.0

Building Description and Photographs

The photographs are important parts of the descriptive information.

The subject property contains a fire station built in 1973 and added on in 1986. The original section of the building was reportedly covered with redwood siding, later covered with stucco when the addition was made. The roof is covered with roll roofing on the flat section and composition shingles on the sloped sections. The interior is finished with drywall, carpet, vinyl floor tile and ceramic tile. Fiberglass duct board HVAC duct work was observed above the ceilings. No insulated pipes were visible.



Photo 1: The exterior



Photo 2: The garage



Photo 3: The roof



Photo 4: Non-suspect flexible duct connectors



Photo 5: The upper part of the roof is the same as the lower part



Photo 6: The exercise room



Photo 7: The restroom



Photo 8: HVAC ducts made of fiberglass duct board, with asbestos mastic on the seams



Photo 9: The laundry shed



Photo 10: The first part of the dormitory



Photo 11: The second part of the dormitory

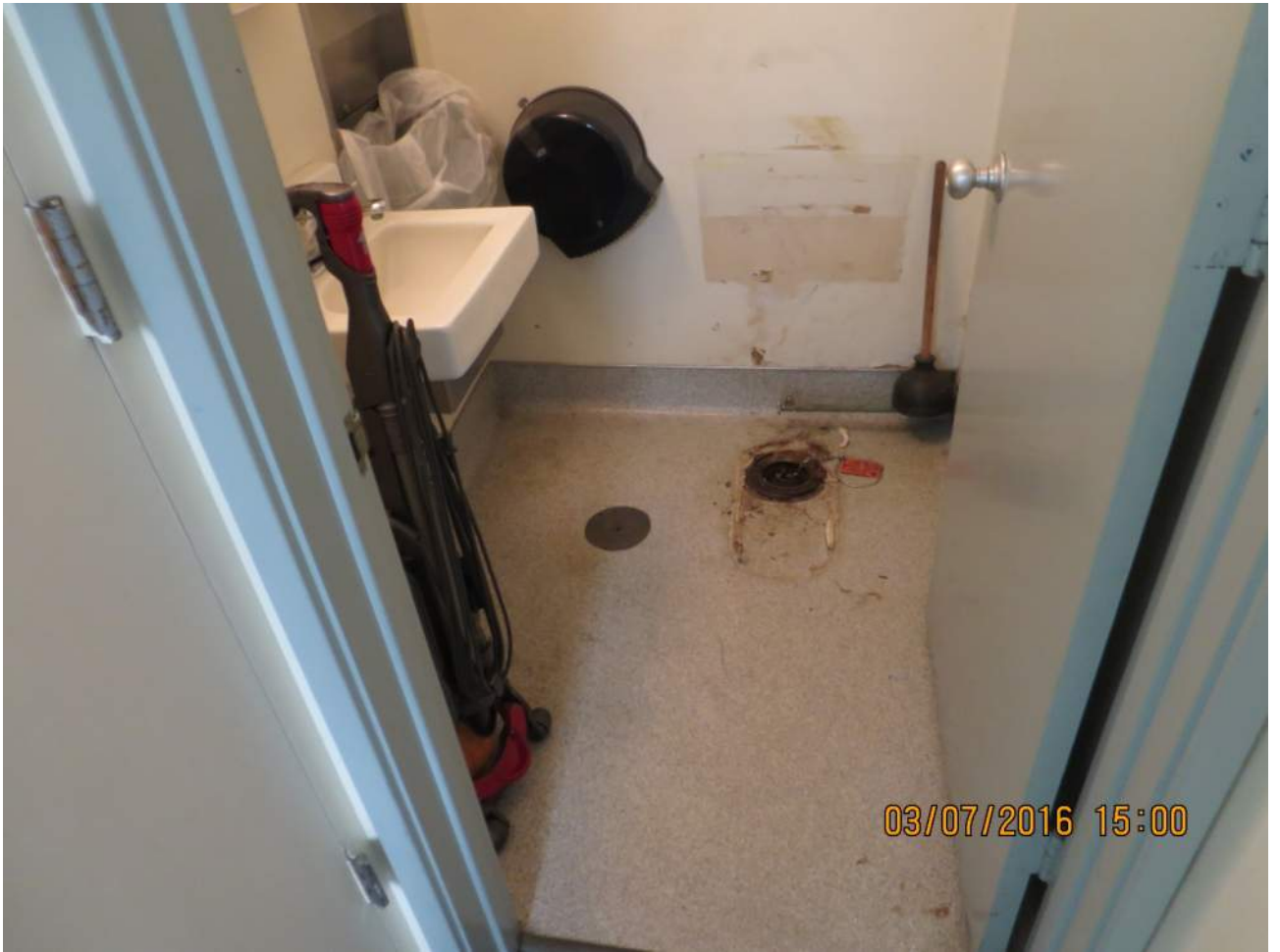


Photo 12: A small toilet room off of the living room



Photo 13: The living room and kitchen



Photo 14: The addition



Photo 15: The communications equipment room



Photo 16: The restroom in the addition



Photo 17: One part of the workshop



Photo 18: The other part of the workshop

Recommendations

All persons who read and use this report should read the entire report and all of the attachments.

Information on laws and regulations is provided as a convenience, not as a substitute for proper legal advice and review of the entire text of the applicable laws and regulations.

It is routine for us to be hired to oversee, monitor, and document abatement work on large projects and school projects. All clients should consider reducing their liability from claims which could arise during or after abatement work by retaining us to oversee, monitor, and document that work.

Limitations of Polarized Light Microscopy (PLM) Analytical Methods

It is possible that materials reported to contain less than 1% asbestos by Polarized Light Microscopy (PLM) analysis may or may not actually contain asbestos. Non-friable Organically Bound (NOB) such as floor tiles (vinyl and asphalt), roofing materials, mastics, and caulking may contain asbestos which is tightly bound to the matrix material and therefore not easily isolated and detected by microscopy. PLM may not detect asbestos fibers less than 0.2 microns in diameter. Because asbestos fibers found in NOB materials may be less than 0.1 microns in diameter, this method can sometimes yield low estimates or even false negative results. In New York, both PLM and TEM analysis is required in order to declare that samples of NOB materials do not contain asbestos. Clients in other areas may wish to have samples of non-friable organically bound materials reported as "none detected" under PLM analysis re-analyzed by TEM.

Required Notifications

California has many Air Pollution Control Districts (APCDs) and Air Quality Management Districts (AQMDs): Amador, Antelope Valley, Bay Area, Butte, Calaveras, Colusa, Eastern Kern, El Dorado, Feather River, Glenn, Great Basin, Imperial, Lake Lassen, Mariposa, Mendocino, Modoc, Mojave Desert, Monterey Bay, North Coast, Northern Sierra, Northern Sonoma, Placer, Sacramento, San Diego, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Siskiyou, South Coast, Tehama, Tuolumne, Ventura, and Yolo-Solano. In most of them, the federal asbestos NESHAP (National Emission Standard for Hazardous Air Pollutant) provisions requiring a two week advance notification for removal of more than 160 square feet or 260 linear feet of asbestos containing materials apply. In the South Coast Air Quality Management District (SCAQMD) which encompasses Los Angeles, Orange, Riverside, and parts of San Bernardino Counties, a ten **working day** advance notification must be given for work on more than 100 square feet of asbestos containing material. SCAQMD has an agreement with US EPA to administer the asbestos NESHAP. Rule 1403 is their asbestos regulation regarding notification and asbestos removal and demolition work. Their Rule 222 governs use of negative air machines and HEPA vacuums for asbestos work. Before starting work, the current notification requirements should be verified. Notification is also required prior to demolition. The company or organization actually doing the work is responsible for notification.

Asbestos abatement contractors must display a posting board at each work location, and it should contain copies of their notification, license, OSHA temporary job site notification, and other information such as the location of emergency medical facilities. Copies of the US EPA Asbestos Hazard Emergency Response Act (AHERA) training, annual asbestos worker medical exam, and latest respirator fit test report for each worker and supervisor must be on site.

Building owners must notify their employees and other owners (e.g of tenant companies) within 15 days of their knowledge of the presence of asbestos containing materials (Connelly Act, AB 3713, California Health and Safety Code, Section 25915), and annually thereafter.

Federal OSHA construction asbestos regulations, 29CFR1926.1101 (k), and the corresponding California regulations, apply to communication of hazards during construction activities.

Federal OSHA general industry asbestos regulations, 29CFR1910.1001(j)(2)(i), and the corresponding California regulations, require that building owners determine the presence, location, and quantity of materials which contain asbestos at the work site, and inform employees about the presence and location of those materials. Again, tenants are not employees. While this aspect of the regulation is widely ignored, as most commercial building have either not been inspected for asbestos, or only partially inspected, we suggest that all building owners implement an asbestos management (O&M) program based on at least a walkthrough asbestos survey. Asbestos was used in many common building materials up to the late 1980s, so having an asbestos management program in place minimizes liability and costs.

Federal OSHA general industry asbestos regulations, 29CFR1910.1001(j)(2)(iii) requires that building owners inform employers of employees, and employers inform employees who will perform housekeeping activities in areas which contain asbestos (actual or presumed) of the presence and location of those materials which may be contacted during such activities.

Federal OSHA general industry asbestos regulations, 29CFR1910.1001(j)(4)(i), and the corresponding California regulations, require that building owners or employers affix or post labels or signs so that employees will be notified of what materials contain, or are presumed to contain, asbestos. The labels are to be attached in such areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/areas. The labels must comply with the requirements of 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard, and must include the following information:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

There is a slight variation in wording of the warnings in California's Connelly Act, AB 3713, California Health and Safety Code, Section 25915:

CAUTION.

ASBESTOS.

CANCER AND LUNG DISEASE HAZARD.

DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT

so we usually develop signs and labels which are a combination of the California and OSHA wording.

In a January 24, 1996 letter to Ms. Lisa K. Rushton interpreting their 29CFR1910.1101 and 29CFR1926.1101 regulations, OSHA stated: "Signs and labels are required to be posted on or near the product. However, it is generally not feasible to put labels on walls and floors. If it is not feasible, alternatives may be used. For example, if asbestos containing floors are being serviced by employees using a common equipment room day after day, then a sign or label for the asbestos flooring can be posted in that room."

California's Connelly Act, AB 3713, California Health and Safety Code, Section 25915, Sub-Section 25915.5 states: "An owner required to give notice to employees pursuant to this chapter, in addition to notifying his or her employees, shall mail, in accordance with this subdivision, a copy of that notice to all other persons who are owners of the building or part of the building, with whom the owner has privity of contract. Receipt of a notice pursuant to this section by an owner, lessee or operator shall constitute knowledge that the building contains asbestos-containing construction materials for purposes of this chapter. Notice to an owner shall be delivered by first-class mail addressed to the person and at the address designated for the receipt of notices under the lease, rental agreement, or contract with the owner. "

The California Proposition 65 notification signs which building owners (excepting many or most government buildings) should have posted on your buildings cover many materials and substances, but they are not sufficient for notifying employees or contractors working on the building.

Contractor or Employer Registration or Licensing

An employer who will be engaging in asbestos-related work involving 100 square feet or more of surface area of asbestos-containing construction material must be registered with DOSH. Asbestos abatement contractors must have this registration in addition to a contractor's license, so they are typically used to perform such work. The square footage of ACCM to be disturbed is computed by adding up the surface area of all ACCMs which will be handled during the course of the work being performed by the employer, even if it is in noncontiguous locations in all of the buildings, structures, premises, fixtures, machinery or other areas which will be handled during the course of the work for which the employer has contracted, whether pursuant to single or multiple contracts with the same hirer. This generally means that a licensed asbestos abatement contractor must be utilized, unless a particular employer feels that they will have enough asbestos work that training and equipping some of their staff and becoming registered is cost effective.

If the work involves less than 100 sq. ft. of ACCM, the employer must send a simple "report of use" to Cal/OSHA. All other occupational health and safety work rule requirements apply- especially those from Title 8 of the California Code of Regulations, 1529. For more information about "reports of use" and the database of carcinogen use reports, call 415-703-5190. Also, see 8 CCR 5203, the Carcinogen Report of Use Requirements.

More information may be found on the DOSH web site.

OSHA Asbestos Regulations:

The federal OSHA asbestos regulations for the construction industry are contained in 29CFR1926.1101. The corresponding California regulations are at California Code of Regulations, Title 8 - Industrial Relations, Division 1- Industrial Relations, Chapter 4 - Division of Industrial Safety, Sub-chapter 4 - Construction Safety Orders, Article 4 - Dusts, Mists, Fumes, Vapors, and Gases, §§1529. Asbestos.

All of these OSHA regulations use the following definitions:

ACM is Asbestos Containing Material (also ACBM, which is Asbestos Containing Building material)

PACM is Presumed Asbestos Containing Material;

Surfacing Material is material that is sprayed, troweled-on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members; and,

TSI is Thermal System Insulation (e.g. pipe and boiler insulation).

The California regulations mirror the federal OSHA regulations, and defines four classes of work on asbestos containing materials:

"Class I asbestos work" means activities involving the removal of TSI and surfacing ACM and PACM.

"Class II asbestos work" means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

"Class III asbestos work" means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed. "Disturbance" means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or

waste bag which shall not exceed 60 inches in length and width.

"Class IV asbestos work" means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

The regulations require that all Class I, II and III asbestos work shall be conducted within regulated areas, with all of the related requirements for demarcation, signs, respirators, and so forth.

All asbestos work performed within regulated areas must be supervised by a competent person. A competent person for Class I and Class II work must be trained as an asbestos supervisor, as originally defined in AHERA, 40 CFR 763, which is available on the US EPA web site.

For Class III work, the competent person need only have the 16 hour training required for maintenance and custodial staff who disturb ACMs (also known as Operations & Maintenance or O&M training).

The OSHA regulations at 29CFR1926.1101(k)(9)(iii) require that training of workers for Class I operations and for Class II operations that require the use of critical barriers (or equivalent isolation methods) and/or negative pressure enclosures be the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement workers training (40 CFR Part 763, subpart E, appendix C). However, 1926.1101(k)(9)(iv)(A) covering work with asbestos containing roofing materials, flooring materials, siding materials, ceiling tiles, or asbestos cement panels, allows a much shorter 8 hour training class for workers. That shorter class must include "hands-on" training and all the elements included in paragraph (k)(9)(viii) of that section, plus the specific work practices and engineering controls set forth in paragraph (g) of that section which specifically relate to the category of work to be performed.

Many private training facilities provide the asbestos supervisor and worker initial and annual refresher training classes, as well as the O&M training classes. Unless it is reasonably certain that the supervisor and workers will never need to disturb more than the small amount of ACM allowed under Class III, they need the normal AHERA supervisor and worker classes.

Despite the small size of Class III projects, they must be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees:

- (A) The work shall be performed using wet methods.
- (B) To the extent feasible, the work shall be performed using local exhaust ventilation.
- (C) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material, the employer shall use impermeable drop cloths, and shall isolate the operation using mini-enclosures or glove bag systems or another isolation method.
- (D) Where the employer does not produce a "negative exposure assessment" for a job,

or where monitoring results show the PEL (Permissible Exposure Limit) has been exceeded, the employer shall contain the area using impermeable drop cloths and plastic barriers or their equivalent, or shall isolate the operation using another listed and compliant control system.

(E) Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where the employer does not produce a "negative exposure assessment" or where monitoring results show a PEL has been exceeded, shall wear respirators which are selected, used and fitted according to the applicable regulations.

Federal OSHA published a nice informal summary of their asbestos regulations for the construction industry, publication OSHA3096, Revised in 2002. It is available online.

Lead Regulations

Three federal agencies regulate lead paint under Title X of the Housing and Community Development Act of 1992: The Environmental Protection Agency (EPA), the Department of Housing and Urban Development (HUD), and the Occupational Safety and Health Administration (OSHA). The federal lead regulations for *construction work* are contained in 29CFR1926.62 and the corresponding California regulations in CCR 8 Section 1532.1 have some additions or revisions which are not in the federal regulations.

In California, accreditation, certification, and work practices for lead-based paint and lead hazards are regulated by Title 17, California Code Of Regulations, Division 1, Chapter 8. California Senate Bill 460 amended H&SC 17920.10 by adding "lead hazards" as a violation, amended H&SC 17961 to allow local agencies to enforce 17920.10 when lead hazards are present, and amended H&SC 105251-56 making it illegal for contractors to create lead hazards and to allow local enforcement agencies to perform enforcement. In California, lead abatement work must be performed by California CDPH (formerly DHS) accredited supervisors and workers.

The action level for employee exposure to airborne lead is 30 $\mu\text{g}/\text{m}^3$ averaged over an 8-hour day. The Permissible Exposure Limit (PEL) is 50 $\mu\text{g}/\text{m}^3$ averaged over an 8-hour day.

If lead is present in a *construction workplace* in *any* quantity, the *construction employer* is required to make an initial determination of whether any employee's exposure to airborne lead exceeds the action level. This initial determination requires that the employer perform an exposure assessment to monitor the construction workers' exposures unless they have objective data from similar operations performed within the previous 12 months, or data from outside sources such as trade associations and suppliers. In a letter to Mr. William F. Alcaresé dated September 10, 2008, federal OSHA stated that an employer working with paint which contains any amount of lead in such a way that would generate airborne levels to which employees may be exposed, must conduct exposure monitoring (or use objective or historical data to demonstrate that the action level is not exceeded).

Monitoring for an initial exposure assessment may be limited to a representative number of employees who are reasonably expected to have the highest exposure levels. Such monitoring

is typically done by clipping small battery-powered air pumps to the employees' belts, with hoses running to filter cassettes clipped to the lapel of their shirts.

Some people mistakenly assume that work on materials found to contain any lead, even a low reading such as 0.18 mg/cm^2 , requires use of a lead abatement contractor. That is incorrect, as abatement personnel are mainly trained to remove lead paint and ceramic tile, not to perform normal construction tasks.

There are four categories of tasks with different requirements for performing exposure assessments when lead is present and when the amount of lead is unknown:

- 1) For common miscellaneous construction tasks such as demolition using machinery, drilling holes through walls to run pipes or conduits, driving fasteners into surfaces, the regulations do not list any special requirements for performing exposure assessments. However, if an employer of an employee performing such a task has any reason to believe that an employee may be exposed to lead in excess of the PEL, they are required to implement the same personal protective measures as for category 2 below. It is obvious that many employers assume that employees performing such work, especially with paint containing less than 1.0 mg/cm^2 of lead, will not be exposed above the PEL.

In California, Title 8, Section 1532.1 states that exposure assessment for such tasks is not required if data showing that the paint contains less than 600ppm of lead is available. However, that is a lesser standard than in the federal regulations, and federal OSHA, in a letter to Mr. William F. Alcarese dated September 10, 2008, states "Accordingly, for all tasks governed by OSHA's Lead in Construction standard (29 CFR 1926.62) involving paints having any level of lead, employers must comply with the assessment measures and any applicable protections of that standard." Also, data showing if the paint is above or below 600ppm of lead is usually not available, as the X-Ray Fluorescence (XRF) machines which are the normal and preferred method of testing produce results in units of milligrams per square centimeter, not ppm, and no conversion between the two units is possible.

- 2) For the tasks listed below, performing an exposure assessment requires that the workers involved be provided with personal protective clothing and equipment, change areas, hand washing facilities, biological monitoring (blood tests), training, and tight fitting air purifying half-face or better respirators as specified in the regulations :

Manual demolition of structures (e.g., dry wall)

Manual scraping;

Manual sanding;

Heat gun applications;

Power tool cleaning with dust collection systems; and,

Spray painting with lead paint;

- 3) For the tasks listed below, performing an exposure assessment requires that the workers involved be provided with personal protective clothing and equipment, change areas, hand washing facilities, biological monitoring (blood tests), training, and tight fitting air purifying full-face or better respiratory protection as specified in the regulations :

Using lead containing mortar;

Lead burning;

Rivet busting;

Power tool cleaning without dust collection systems;

Cleanup activities where dry expendable abrasives are used;

Abrasive blasting enclosure movement and removal;

- 4) For the tasks listed below, performing an exposure assessment requires that the workers involved be provided with personal protective clothing and equipment, change areas, hand washing facilities, biological monitoring (blood tests), training, and tight fitting full-face PAPR or better respiratory protection as specified in the regulations:

Abrasive blasting; and,

Welding, cutting, and torch burning.

Lead Waste Disposal

To determine if lead waste, including soil, demolition debris, and waste from lead abatement projects, is hazardous waste:

- 1) Sample the waste and have a laboratory perform a Total Threshold Limit Concentration (TTLC) test (preparation EPA 3050B, test method EPA 6010B). If that test indicates 1,000 parts per million (ppm) or more lead, the waste is hazardous waste.
- 2) If the test results indicate that the waste contains 50ppm or less of lead, it is not a hazardous waste.
- 3) If the waste contains 50 or more ppm of lead, but less than 1,000ppm of lead, then a California California Waste Extraction Test (WET - preparation method CAC 66261.126, test method EPA 6010B) should be performed on the waste

sample.

- 4) If the waste exceeds the Soluble Threshold Limit Concentration (STLC) for lead of 5 ppm, it is a California hazardous waste.

Hazardous wastes must be disposed of at a hazardous waste landfill and must be hauled under a proper manifest by a licensed hazardous waste transporter.

In an E-mail message sent 5/27/2004, Mr. Charles Corcoran (Ccorcora@dtsc.ca.gov or 916-327-4499), Chief of the Waste Identification and Recycling Section of the California Department of Toxic Substances Control stated that "The waste must be classified as it will be generated. If the entire building is to be demolished, then that is the waste to be classified. In the event the whole building is demolished, if the entire waste does not exceed the 350 ppm limit [note - his E-mail was written before the 350ppm requirement expired, therefore reverting back to the 1,000 ppm TTLC and 5 ppm STLC limits] or exhibit any hazardous waste characteristic, it may be disposed to a C&D landfill. If any individual components are first removed from the building, then DTSC would consider those wastes to be separately generated and would expect the generator to characterize them as a distinct waste."

To perform the profile testing, a representative sample of the waste needs to be collected. If a whole building is to be disposed, then the sample would be of the entire debris (we would take care to avoid over or under sampling any particular building components). If the waste is a window, then some of the wood, some of the glass, and some of the putty should be included. If the waste is ceramic tile (as during a school bathroom remodeling project), then some tile, some grout, and some of the mortar needs to be included. If the waste is wood trim, then a chunk of the wood needs to be cut out. If the waste is painted concrete, then a core or chunk of the concrete needs to be collected. In all cases, the sample should approximate the proportion of lead paint / lead ceramic tile and other materials actually present in the waste. The laboratory will require that the sample they receive be pulverized.

All Field Personnel Should Have Basic Asbestos and Lead Training

All contractors working on existing buildings should see that all of their field personnel have at least the two hour asbestos awareness training, and that any of their employees who will be performing work involving spot disturbances / removal of materials which contain asbestos have the 16 hour training needed for performing OSHA Class III asbestos work. They should also see that all field personnel also have the basic training on respiratory protection needed for work with lead (they would receive this during the 16 hour asbestos training).

Exposure Assessment Programs Are Mandatory

All contractors should have well organized asbestos and lead exposure assessment programs and exposure assessment databases. Exposure assessment is mandatory, and until exposure assessment data is obtained, contractors must provide respiratory protection and other measures which could be very inconvenient, cumbersome, and expensive. Exposure assessment data is generally only good for one year, so ongoing collection of data avoids having out of date exposure assessment data. It also builds up a nice database of information to show that the contractor is in compliance with the applicable laws and regulations and that

workers are not being improperly exposed.

Exposure assessment data is collected for workers with similar experience and training performing similar tasks. It is important to organize the exposure assessment data in the contractor's database by tasks and experience.

The actual data collection involves placing personal air pumps on the belts of the workers being monitored, with a filter cassette hanging over their shoulder and clipped to their collar so that it is in their "breathing zone." Asbestos exposure assessments require both 30-minute "excursion" (highest exposure) sample and 8 hour samples. Lead exposure assessments require 8 hour samples (a typical work shift). It is important to record the sample information - flow rate, work task being monitored, and worker experience. The filter cassettes should be properly labeled and are submitted to a laboratory for analysis of the lead or asbestos content.

Once initial exposure assessment data is obtained, the Contractor need only provide the respiratory protection and other measures indicated by the exposure assessment data for each task-experience combination.

The federal Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard is 29 CFR 1910.134. Employees who are required to wear respirators must be provided with training on the use of the respirator, and a physical examination by a doctor to show that they are fit to wear a respirator. They must be offered a selection of respirators or different brands and sizes to find one that fits well, and must be fit tested (once per year) to see that the respirator seals well when they are wearing it.

Asbestos - The Significance, Or Not, Of The Year 1980:

There is occasionally some confusion regarding the significance of the year 1980. It is common knowledge in the asbestos consulting and abatement (removal) industries that many common asbestos containing materials (e.g. drywall joint compound, stucco, flooring materials, ducts) were used well into or throughout the 1980s. Federal OSHA regulations, 29CFR1926.1101(k)(1), state:

Employers and building owners shall identify TSI and sprayed or troweled on surfacing materials in buildings as asbestos-containing, unless they determine in compliance with paragraph (k)(5) of this section that the material is not asbestos-containing. Asphalt and vinyl flooring material installed no later than 1980 must also be considered as asbestos containing unless the employer, pursuant to paragraph (g)(8)(i)(I) of this section determines that it is not asbestos-containing.

However, the regulation then immediately goes on to state (emphasis added):

If the employer/building owner has actual knowledge, or should have known through the exercise of due diligence, that other materials are asbestos-containing, they too must be treated as such. When communicating information to employees pursuant to this standard, owners and employers shall identify "PACM" as ACM.

The exercise of due diligence would include obtaining an asbestos survey by a good consultant,

and such a survey would include sampling any suspect materials installed after 1980.

Scope of Services

We performed a visual examination of those areas to determine the overall construction and usage of the building(s) and to plan and coordinate the survey work, taking into account any information provided on the age and construction of the building(s). We examined any plans and documents supplied to us determine if any ACMs were specified and to provide information on remodeling or renovation work. Areas of potential ACM were identified using the available information on the age of the building, construction materials present and the consultant's expertise.

Asbestos Containing Materials (ACMs) Which Are Banned

It is important not to view the dates of the laws / regulations which banned the materials listed below as absolute cut-off dates. In many cases, the laws / regulations allowed suppliers to sell their existing supplies, and the manufacturers may not have immediately been aware of the new laws / regulations. For example, we have spoken with a large manufacturer of drywall joint compound in southern California and learned that they were still manufacturing drywall joint compound with asbestos in the middle 1980s. Our experience inspecting thousands of buildings of all types also confirms that asbestos containing drywall joint compound was used in many buildings constructed in the middle 1980s.

- Spray applied fireproofing was banned by the 1973 Clean Air Act (CAA) Asbestos National Emission Standard for Hazardous Air Pollutant (NESHAP);
- Wet-applied and pre-formed (molded) asbestos pipe insulation and pre-formed (molded) asbestos block insulation on boilers and hot water tanks were banned by the 1975 Clean Air Act (CAA) Asbestos National Emission Standard for Hazardous Air Pollutant (NESHAP);
- Spray applied decorative ACM (e.g. acoustic ceiling texture) was banned by the 1978 Clean Air Act (CAA) Asbestos National Emission Standard for Hazardous Air Pollutant (NESHAP);
- Patching compounds which are used to cover, seal or mask cracks, joints, holes and similar openings in the trim, walls, ceiling, etc. of building interiors (also used to create textured effects) which a consumer can purchase (those where the sale or use of the product by consumers is facilitated, and those containing respirable free form asbestos which are used in residences, schools, hospitals, public buildings or other areas where consumers have customary access) were banned by the US Consumer Product Safety Commission (CPSC) in 1978 - see 16 CFR 1304;
- Artificial emberizing materials (ash and embers) containing respirable freeform asbestos (generally packaged in an emberizing kit for use in fireplaces, and designed for use in such a manner that the asbestos fibers can become airborne under reasonably foreseeable conditions of use were banned by the US

Consumer Product Safety Commission (CPSC) in 1978 - see 16 CFR 1305;

- Spray-on application of materials containing more than 1% asbestos to buildings, structures, pipes, and conduits unless the material is encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying was banned by the 1990 Clean Air Act (CAA) Asbestos National Emission Standard for Hazardous Air Pollutant (NESHAP);
- Asbestos paper products (flooring felt, roll board, and corrugated, commercial, or specialty paper) were banned by the Toxic Substances Control Act (TSCA) - On July 12, 1989, the US EPA issued a final rule banning most asbestos-containing products. While most of that regulation was overturned by the Fifth Circuit Court of Appeals in New Orleans in 1991, the bans on these materials were affirmed; and,
- Products that have not historically contained asbestos, otherwise referred to as "new uses" of asbestos were banned by the Toxic Substances Control Act (TSCA) - On July 12, 1989, the US EPA issued a final rule banning most asbestos-containing products. While most of that regulation was overturned by the Fifth Circuit Court of Appeals in New Orleans in 1991, the bans on these materials were affirmed.

Various asbestos containing materials were specifically listed as NOT banned by the US EPA's guidance document of May 18, 1999, but this list is far from comprehensive, as many other common materials which are not banned are not listed:

Troweled-on Surfacing Materials (e.g. cement stucco and gypsum plaster);

Asbestos-cement corrugated sheet, shingles, flat sheet, millboard, and pipe;

Asbestos clothing for adults;

Pipeline wrap;

Roofing felt;

Vinyl-asbestos floor tile;

Automatic transmission components;

Clutch facings;

Friction materials;

Brake pads, linings, and blocks;

Gaskets;

Non-roofing coatings; and,

Roof coatings.

Which Materials Commonly Contain Asbestos?

The list in the table below was developed based on US EPA publications and our experience performing asbestos surveys / inspections of thousands of buildings of all types.

While the production and usage of some have been banned, and most others are simply no longer produced or installed, many are still legal and new products containing asbestos could appear on the market, so this list may become out of date.

Most Common Suspect Material	Typically Friable In Place?	Notes and <u>Approximate</u> Usage Dates
Acoustic Ceiling Texture	Yes	Through the mid to late 1970s
Acoustic Plaster	No	Through the mid 1970s
Adhesives / Mastics (flooring, mirror, pipe insulation, etc.)	No	Through the 1980s
Asphalt Floor Tile	No	Through the 1960s
Asphalt pavement (the gravel used to make it)	No	There are substantial areas of naturally-occurring asbestos in the USA, and in recent years more has been discovered
Blown-in Insulation	Yes	Prior to the mid 1970s
Boiler and Vessel Insulation	Yes	Through the mid-1970s
Breeching / Flue Insulation	Yes	Through the mid 1970s
Caulking and Sealants	No	Through the mid-1980s
Ceiling Tiles and Lay-in or Suspended Ceiling Panels	Yes	Prior to the early 1970s, often are heavy and have a "layered" internal appearance. Newer non-suspect types are readily identified.
Concrete (especially the gravel used to make it)	No	There are substantial areas of naturally-occurring asbestos in the USA, and in recent years more has been discovered
Concrete block filler (used to smooth the rough surface)	No	Through the 1970s and into the 1980s

Most Common Suspect Material	Typically Friable In Place?	Notes and <u>Approximate</u> Usage Dates
<p>Drywall (also known as Gypsum Wallboard or the brand name Sheetrock). Due to imprecise use of English, and confusion between composite and discrete layer sampling, some people may mistakenly believe that drywall itself is a suspect material. Some have loosely used the term "wallboard" to refer to asbestos-cement panels used as wall covering. Indeed, for quite a few years we sampled drywall. Finally tiring of wasting time and money sampling a material which was never, ever positive, we investigated. We discovered these problems, and a situation in which mistakes in one document (e.g. the sloppy use of the imprecise term "wallboard") repeated in other documents. All the times we have asked, people stating that drywall might contain asbestos have not been able to produce an example of it. The drywall system is suspect, but not the gypsum board itself.</p>		
Drywall Joint Compound, Also Known As Mud, May Also Be Used as a Skim or Texture Coat	No	Manufactured and applied through the mid-1980s. Naturally occurring asbestos in raw materials is allowed, but manufacturers avoid liability by screening raw materials.
Ducts (Made of Corrugated <i>Asbestos</i> Covered with Aluminum on the Inside and Outside, one common brand is Alumabestos)	Yes	Through the mid 1980s
Duct Insulation (corrugated or paper)	Yes	Sometimes found on register boots and ducts through the mid-1980s
Electric Wiring Insulation	Yes	Prior to the 1970s in some cables and wires, through the 1980s in some heating appliances and machinery
Electrical Panel Partitions and/or Arc Chutes	No	Used through the 1970's
Elevator Equipment Panels	No	Through the 1970's
Elevator Brake Shoes	No	Many still in use
Fiber-Cement Conduits	No	Through the 1980's
Fiber-Cement Ducts (one common brand is Transite)	No	Common for underground HVAC ducts through the 1980s
Fiber-Cement Flues (one common brand is Transite)	No	Used through the 1980s, although usage tapered off sharply after the 1970's

Most Common Suspect Material	Typically Friable In Place?	Notes and <u>Approximate</u> Usage Dates
Fiber-Cement Sheets - Interior, Exterior, or in Freezers/Chillers, (some made with wood patterns, one common brand is Transite)	No	Used through the 1970s, with some usage in the 1980s
Fiber-Cement Pipes (one common brand is Transite)	No	Through the 1980's and some may still be in use
Fiber-Cement Cooling Tower Slats and Other Components (one common brand is Transite)	No	Through the 1980s
Fire Blankets	Yes	Prior to the 1980s
Fire Curtains	Yes	Prior to the 1980s
Fire Door Interior Insulation	No (covered)	Through the 1970s
Fireproofing Materials (as on structural steel)	Yes	Through the mid to late 1970s
Flexible Duct Connectors (also known as vibration cloths)	Yes	Soft woven cloth, easy to differentiate from fiberglass or rubber
Gaskets	No	Still in use
Gravel	No	There are substantial areas of naturally-occurring asbestos in the USA, and in recent years more has been discovered
Electrical Ducts	No	Through the 1970s
Laboratory Hoods/Table Tops	No	Trough the 1980s
Mastics (floor tile, mirror, ceiling tile, etc.)	No	Through te 1980s
Paint - textured or elastomeric / coatings	No	Through the mid to late 1970's
Packing Materials (for valves or for wall/floor penetrations)	No	Through the 1980s
Pipe Insulation (corrugated air-cell, block, etc.)	Yes	Through the 1970s

Most Common Suspect Material	Typically Friable In Place?	Notes and <u>Approximate</u> Usage Dates
Plaster (interior gypsum plaster, which typically consists of two or more layers)	No	Rare, used prior to the mid 1970's
Plastic Roof Cement (typically applied at flashings, joints, and penetrations, may brands are still manufactured with asbestos)	No	Very common, still legally manufactured, sold and applied
Roofing Felt / Tar paper	No	Through the 1970's and into the 1980s
Roofing Shingles or Roll Roofing	No	Through the 1970s and into the 1980s
Sheet Vinyl Flooring	No	Through the 1980s
Silver Roof Paint	No	Through the 1970s and into the 1980s
Spackling Compounds	No	Through the 1970s
Spray-Applied Insulation	Yes	Through the mid to late 1970s
Stucco, or Cement Plaster, which typically consists of two or more layers	No	Generally, used through the 1980s, but in early 2006 an Arizona regulator told us that a wholesaler in the Phoenix area imports asbestos and sells it to contractors who mix it into stucco
Tank and Vessel Insulation	Yes	Through the mid to late 1970s
Taping Compounds (drywall joint compound)	No	Through the mid 1980s
Textured Paints / Coatings (paints made with texture, not texture applied before painting)	No	Through the 1970s
Thermal Paper Products	Yes	Through the 1970s
Vinyl Floor Tile	No	Through the mid 1980s
Window Putty	No	Through the 1970s

Asbestos Sampling

Representative samples of potential / suspect ACM were collected after identification of homogeneous sampling areas (these are areas in which the materials are uniform in color, texture, construction or application date and general appearance) of potential ACM. Each

homogeneous area of potential ACM was observed for material type, location, condition, and friability. Representative samples were collected from each area of potential ACM, excepting areas which were inaccessible, or areas of assumed ACM. The building(s) was examined for the presence of previous or multiple layers of materials, if applicable. If no suspect materials were identified, or if only materials assumed to contain asbestos were identified, no samples were collected.

Most of the laws and regulations regarding asbestos sampling reference the AHERA section on sampling (40CFR763.86). We used that protocol, with additions to be more conservative, but not to overly increase the cost of asbestos surveys. Given the lack of detailed guidance in AHERA regarding miscellaneous materials, our judgement and extensive experience were important factors in determining the appropriate number of samples. For example, we know that drywall joint compound is difficult for the laboratories to analyze due to the presence of binders and such and the relatively low asbestos content, so we collect more samples from an area of it than we would from a similar area of a material such as sheet vinyl flooring which is very easy to analyze and which typically was made with a relatively high asbestos content. Of course, we do not sample non-suspect materials (see the table of suspect materials above).

Suspect materials were assumed to contain asbestos or were sampled as follows:

Friable Surfacing Material, which is a friable suspect material sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes:

- At least three bulk samples from each homogeneous area that is 1,000 ft² or less;
- At least five bulk samples from each homogeneous area that is greater than 1,000 ft² but less than or equal to 5,000 ft²; and,
- At least seven bulk samples from each homogeneous area that is greater than 5,000 ft².

Friable Thermal System Insulation, which is a friable suspect material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes:

- At least three bulk samples from each homogeneous area;
- At least one bulk sample from each homogeneous area of patched thermal system insulation if the patched section is less than 6 linear or square feet; and,
- In a manner sufficient to determine whether the material is ACM or not ACM, bulk samples from each insulated mechanical system where cement or plaster is used on fittings such as tees, elbows, or valves.

Friable Miscellaneous Materials, which are interior building materials on structural components, structural members or fixtures, such as ceiling tiles:

- Bulk samples from each homogeneous area in a manner sufficient to determine whether the material is ACM or not ACM.

Nonfriable Materials which are interior building materials on structural components, structural members or fixtures, such as floor tiles:

- In a manner sufficient to determine whether the material is ACM or not ACM, bulk samples from each homogeneous area.

Sampling was done based on the friability of the material at the time of the asbestos survey.

Reasonable care was taken to reduce accidental fiber release into the building environments. In order to reduce the potential for fiber release while collecting samples of suspect materials, the test areas were sprayed with a water-containing surfactant. The tools used for collection of samples were cleaned with soapy water-soaked cloths between samples in order to avoid cross-contamination of samples. The samples were placed into heavy plastic sample bags which were then sealed and labeled. The location, type, and other information on each sample were recorded.

Asbestos Laboratory Analysis

A chain-of-custody form accompanied the samples to the laboratory. The samples were analyzed by an NVLAP accredited laboratory using the Polarized Light Method (PLM, EPA 600/R-93/116 and/or EPA 600/M4-82-020600M4). The PLM method is, by far, the most commonly used method to analyze bulk materials for the presence of asbestos. This method utilizes the optical properties of minerals to identify the selected constituent. The use of this method enables identification of the type and approximate percentage of asbestos in a given sample. The detection limit of the PLM method for asbestos identification is about one percent by volume.

Lead Survey

Suspect areas of lead (paint and ceramic tile glaze) were analyzed using non-destructive In place testing using a portable Thermo Niton 700-703ALXp portable XRF (X-Ray Fluorescence) instrument.

General Limitations

The conclusions presented in this report are professional opinions based on the indicated data described in this report. Opinions and recommendations presented herein apply to site conditions existing at the time of the site visit(s). Changes in the conditions of the property may occur with time due to natural processes or various activities on the subject property. Changes in applicable codes and standards may also occur as a result of legislation or the broadening of knowledge. Accordingly, this report may become invalid. This report is intended only for the client, purpose, location, and project indicated. The only persons or companies which may rely

on it are our client, an abatement contractor hired by our client, and the client of our client when we are sub-consultants. All others may not rely upon this report without having a contract in place with us. We do not warrant that the information supplied to us by others is accurate.

Reports such as this prepared by any consultant are never intended to be definitive studies of the presence of asbestos and/or lead at the subject properties. Other locations of asbestos and/or lead may exist at the subject property, and the levels may vary from those stated in this report. There may be variations in the composition of materials which appear similar. Materials may be hidden from view and not accessible. This is especially so for occupied structures or structures where damage and invasive sampling need to be minimized (such as structures not owned by our client).

For pre-demolition surveys of vacant buildings, we do not hesitate to examine the structure in several areas, looking for multiple layers of materials and materials which are under other materials. We very, very rarely miss anything. However, we are performing surveys, not demolition work, so may not see things such as a patch of floor tile hidden under carpeting, and not detected by our typical examination of the area under the carpet at a corner(s) or existing hole(s). We examine the structure(s) in several locations, but do not pull up all of the carpet, or cut numerous holes in floors and walls. That would constitute demolition work, not survey work, and could also create contamination due to excessive disturbances of suspect materials.

Location and sampling of underground items, such as asbestos-cement pipes, would have been outside of the scope of services for this project.

Regulatory Compliance

The report meets and exceeds the requirements of all applicable laws and regulations. If someone unfamiliar with our reports, after reading this entire report and all of the attachments, has any questions regarding where specific information is found, they should contact us by phone or E-mail, and we will direct them to the appropriate places in this report.

Consultant Background

The inspection and sampling portions of the survey and professional aspects of the report preparation were performed by Mr. F. Stephen Masek. Mr. Masek has performed thousands of environmental inspections in a wide variety of commercial and government buildings, including airports, military bases, high-rise buildings, apartment buildings, shopping centers, schools, office buildings, hospitals, retail buildings, factories, recreation facilities, warehouses, residences and R&D buildings. Mr. Masek has been a California Certified Asbestos Consultant since the certification program started in 1992, and has been an asbestos consultant since 1990. Mr. Masek has been a California certified lead Inspector / Risk Assessor since 1993. He has extensive experience in related environmental services. He obtained a B.S.B.A. degree from Washington University in St. Louis (1980). He is a member of Mensa, the high IQ society. As an active member of ASTM, he has contributed to the revisions to the ASTM Phase I Environmental Site Assessment Standard, was chairman of an asbestos survey task group, and helped write portions of the ASTM Property Condition Assessment standard. He has written

numerous magazine articles and has spoken at local, state, and national conventions. He also provides expert witness services.

Sincerely,
Masek Consulting Services, Inc.



F. Stephen Masek
President

California Certified Asbestos Consultant #92-0822

California Certified Lead Inspector / Risk Assessor / Project Monitor #751

Indoor Air Quality Association member

Association of Environmental Professionals member

ASTM International member, Committees D-22 & E-50

E-Mail: stephenmasek@masekconsulting.net

Sketch and Laboratory Report Attachments

The attachments are important parts of this report.

The chain of custody form(s) is/are part of the laboratory report(s), and is/are one of the pages counted in the report(s).

Avoiding laboratory bias is done by minimizing the information provided to the laboratory. Therefore, we do not give information to the laboratory about which samples are or are not homogeneous, where they were collected, the full address of the building, and the name of the owner, as such information could be the cause of laboratory bias.

A sketch follows. We generally omit the prefix of the sample numbers from the sketch for clarity. Such prefixes are used solely to prevent the laboratory from accidentally mixing samples from different batches.

The three page asbestos laboratory report, number 121601172, prepared by EMSL Analytical, Inc. follows.



EMSL Analytical, Inc.

3356 West Catalina Drive Phoenix, AZ 85017

Tel/Fax: (602) 276-4344 / (602) 276-4053

<http://www.EMSL.com> / phoenixlab@emsl.com

EMSL Order: 121601172

Customer ID: 32MASE50

Customer PO:

Project ID:

Attention: Stephen Masek
Masek Consulting Services, Inc.
23478 Sandstone
Mission Viejo, CA 92692

Phone: (714) 878-5284

Fax:

Received Date: 03/08/2016 10:00 AM

Analysis Date: 03/10/2016

Collected Date: 03/07/2016

Project: FS-3

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
FS3-1 121601172-0001		Various Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
FS3-2 121601172-0002		Various Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
FS3-3 121601172-0003		Black Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
FS3-4 121601172-0004		Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-5 121601172-0005		Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-6 121601172-0006		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
FS3-7 121601172-0007		Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
FS3-8 121601172-0008		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
FS3-9 121601172-0009		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
FS3-10 121601172-0010		Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
FS3-11 121601172-0011		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
FS3-12 121601172-0012		Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
FS3-13 121601172-0013		White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-14 121601172-0014		Brown Non-Fibrous Homogeneous	3% Fibrous (Other)	97% Non-fibrous (Other)	None Detected
FS3-15 121601172-0015		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
FS3-16 121601172-0016		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile



EMSL Analytical, Inc.

3356 West Catalina Drive Phoenix, AZ 85017

Tel/Fax: (602) 276-4344 / (602) 276-4053

<http://www.EMSL.com> / phoenixlab@emsl.com

EMSL Order: 121601172

Customer ID: 32MASE50

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
FS3-17 121601172-0017		Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
FS3-18 121601172-0018		White Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
FS3-19 121601172-0019		Various Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (Other)	None Detected
FS3-20 121601172-0020		Gray Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
FS3-21 121601172-0021		White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-22 121601172-0022		Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-23 121601172-0023		White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-24 121601172-0024		White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-25 121601172-0025		White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-26 121601172-0026		Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
FS3-27 121601172-0027		Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

Cheryl Rivadeneyra (15)

Jillian Chesson (12)

Michelle Wilson, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Phoenix, AZ NVLAP Lab Code 200811-0, AZ0937

Initial Report From: 03/11/2016 10:39:54

Chain Of Custody To:

- ☐ EMSL Analytical, Inc. at 200 Route 130 North, Cinnaminson, NJ 08077 Ph. 856-858-4800
☐ LA Testing 520 Mission St. ; S. Pasadena, CA 91030; Ph. 323-254-9960
☐ LA Testing 11652 Knott Avenue, Unit F5 Garden Grove, CA 92841 Ph. 714-828-4999
☒ EMSL Analytical, Inc. 3356 W. Catalina, Phoenix, AZ 85017 Ph: 602-276-4344

From: Masek Consulting Services, Inc. (customer number 32MASE50)
23478 Sandstone St. Mission Viejo, CA 92692

Phone: (949) 581-8503 • <http://www.masekconsulting.net>

EMSL's Federal Express Account 2148-0319-4

Project Name: FS-3

Enclosed are 27 samples numbered FS3-1 do FS3-27

First positive Stop on the following samples: N/A

☒ PLM ☐ TEM(AHERA / LEVEL II / bulk) ☐ Lead (1 ☒ wipe) ☐ Other: _____

Turnaround (from the day & hour the samples are received at the lab to the day and hour we receive the complete **final** report with **all** signatures): ☒ 3 Day ☐ 48 Hour ☐ 24 Hour ☐ 6 hour ☐ 3 hour

Only analyze the numbered materials listed on the sample bags.

E-mail the results with the countersigned chain of custody to
stephenmasek@masekconsulting.net

Samples collected and relinquished by F. Stephen Masek:

Date: 3/7/16 Signature: F. Stephen Masek

Lab - Received:

Date: 3/8/16 Name: Veronica Lora Signature: [Signature]
10am 3rd fl (8088 7073 5818)

